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TITLE: Spread spectrum communication  
transmitter and receiver,  
and CDMA mobile communication system  
and method

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Brief Summary Text - BSTX (15):

FIG. 6A shows a correlation between the spreading code for the pilot channel and the pilot signal transmitted by the base station 21 and received by the mobile station 25. Similarly, FIGS. 6B, 6C and 6D show correlations with the pilot signals transmitted by the base stations 22, 23 and 24 and received by the mobile station 25. Peaks 201 through 204 respectively shown in FIGS. 6A through 6D indicate timing synchronization points in the pilot channels of the base stations 21 through 24. Variations in the waveforms other than the peaks 201 through 204 shown in FIGS. 6A through 6D result from a self-correlation of the spreading code for the pilot channel. These variations in the waveforms are noise components for the mobile station 25 (receiver).

Brief Summary Text - BSTX (16):

The mobile station 25 shown in FIG. 4 receives the signals of the pilot channels transmitted by the base stations 21 through 24 in such a state that the signals are superimposed. Hence, the output signal of the despreader 8 of the pilot channel receive unit 34 has a formation in which the four waveforms shown in FIGS. 6A through 6D are superimposed. It should be

noted that the correlations shown in FIGS. 6A through 6D are not affected by multipath fading or Rayleigh fading.

Brief Summary Text - BSTX (22) :

However, the conventional CDMA mobile communication system thus configured has a disadvantage in that a good S/N ratio cannot be obtained at the time of receiving the pilot signals from the base stations due to the fact that all the base stations continue to transmit the pilot signals. The mobile station 25 shown receives the pilot signal from the base station 21 to which the mobile station 25 belongs so that the signals of the pilot channels transmitted by the other base stations 22, 23 and 24 are superimposed, as noise components, on the pilot channel data signal from the base station 21. Hence, the pilot channel receive unit 34 does not have a good S/N ratio.

Brief Summary Text - BSTX (23) :

The signals of the pilot channels transmitted by the base stations 22 through 24 serve as interference signals with respect to the signal of the traffic channel processed by the traffic channel receive unit 35 of the mobile station 25. That is, the mobile station 25 always receives the signals of the pilot channels transmitted by the base stations 22 through 24 to which the mobile station 25 does not belong, and thus always receives interference by the base stations 22 through 24. Hence, the given frequency range can accommodate only a reduced number of stations (corresponding to a channel capacitance) .

Brief Summary Text - BSTX (26) :

A specific object of the present invention is to provide a CDMA transmitter

and a CDMA receiver which can realize a CDMA mobile communication system in which an interference by signals transmitted via pilot channels by base stations is eliminated and an increased channel capacity and an improved SIN ratio can be obtained.

US Reference Patent Number - URPN (7) :  
5559789